We Claim

1. Separation module comprising at least one bundle of ceramic capillaries (9), wherein a distance is established between capillaries (9) by joining.

2. Separation module according to claim 1, wherein said capillaries are combined at their endings by perforated plates and further comprising a housing, which encloses the bundle, the housing having an inlet and/or outlet pipe in fluid communication with the inside of the capillaries for a first material flow and/or an outlet pipe in fluid communication with the innerspace between the capillaries for a second material flow, wherein the distance between the capillaries is kept constant by spacers (6).

3. Separation module according to Claim 1, wherein the bundle of capillaries contains capillaries (9) having external diameters in the range of from 0.3 mm to 10 mm, and internal diameters of from 0.1 mm to 8 mm.

4. Separation module according to Claim 3, wherein said external diameters range from 1 mm to 2.5 mm and said internal diameters range from 0.7 to 1.5 mm.

5. Separation module according to Claim 1, wherein the distance between capillaries (9) and the capillary bundle is $\leq$ 10 mm.

6. Separation module according to Claim 5, wherein said distance is < 3mm,

7. Separation module according to Claim 1, wherein the distance between the capillaries (9) and the bundle is established as a function of the permeate flow and permeate medium.

8. Separation module according Claim 1, wherein the capillary bundles have a diameter of from 10 mm to 250 mm.

9. Separation module according to Claim 8, wherein said diameter is from 20 mm to 50 mm.

10. Separation module according to Claim 1, wherein the capillaries (9) have, on the inside, a thin membrane (M) having separation activity.

11. Separation module according to Claim 1, wherein the capillaries (9) have, on the outside, a thin membrane (M) having separation activity.

12. Separation module according to Claim 1, comprising built-in spacers as baffle plates (6) for controlling the flow in the space between the capillaries (9).

13. Separation module according to Claim 1, wherein several bundles of capillaries are arranged parallel to each other in a housing and the separation module comprises a feed space and a permeation space.

14. Separation module according to Claim 13, wherein the housing consists of stainless steel and a sealing of feed space and permeation space is effected by an elastomer O-ring, a graphite seal or a sealing compound.

15. Separation module according to Claim 13, wherein the housing consists of ceramic and a sealing of feed space and permeation space is effected at joints by ceramic- or glass-containing slip, paste or adhesive.

16. A membrane reactor comprising the separation module of Claim 1, wherein the individual capillaries are coated with a catalyst or are themselves a catalyst or the catalyst is otherwise present in the module.

17. Method for producing the separation module of Claim 1, wherein joining is effected by fixing premoulded capillaries (9) in bundle form parallel to one another and a distance apart which is determined by requirements of material

transport and flow in the subsequent separation module, and connecting said capillaries in a substance-impermeable manner at least in the planes of the two end faces of the future separation module.

18. Method according to Claim 17, wherein sintered ceramic capillaries (9) are placed in holes at the bottom of a mould (8), this mould (8) is filled with a polymer-, ceramic- and/or glass-containing casting compound (10) and, after demoulding, the projecting ends of the capillaries (9) are cut off.

19. Method according to Claim 17, wherein sintered ceramic capillaries are inserted into perforated discs and the joints between the two are sealed with the use of polymer-, ceramic- or glass-containing slips, pastes or adhesives.

20. Method according to Claim 17, wherein sintered ceramic capillaries are inserted into unsintered ceramic perforated discs and are firmly connected by shrinkage of the perforated disc.

21. Method according to Claim 17, wherein unsintered ceramic capillaries are inserted into unsintered ceramic perforated discs and firmly connected by co-firing.

22. Method according to Claim 17, wherein sintered ceramic capillaries (9) are wound with at least one strip (13) of polymer-, ceramic- and/or glass-containing film, braid or woven fabric and firmly connected by shrinkage during curing of the film.

23. Method according to Claim 17, wherein unsintered ceramic capillaries (9) are wound with at least one strip (13) of ceramic- and/or glass-containing film, braid or woven fabric and firmly connected by co-firing.

24. Method according to Claim 17, wherein the capillaries are coated on their inside or outside walls with a membrane having separation activity and, in the

case of a completely ceramic capillary bundle, coating with the membrane (M) having separation activity is effected after completion of the capillary bundle in one step.

25. Method according to Claim 17, wherein the capillaries are coated on their inside or outside walls with a membrane having separation activity, wherein a nonceramic component is present in the capillary bundle, and the capillaries are coated with the membrane (M) having separation activity prior to installation in the module.

26. A membrane separation process, wherein a fluid to be separated is passed through a separation module of Claim 1, having a feed space and a permeation space, and wherein a vacuum is applied to the permeate space (3).